Better Crops

The Pocket Book of Agriculture.

May 1925 10 Cents

See Page 26 for Prize Contest Announcement

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Better Crops

The Pocket Book of Agriculture

VOLUME IV NUMBER THREE

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VOL. IV NEW YORK, MAY, 1925 NO. 3

Jeff suggests some unusual answers to the question:

What is Failure?

By Jeff McDermid

DIAMONDS are worth several hundred dollars a karat at the moment, simply because women are willing to buy more diamonds than can be mined. Let a fabulous mine be discovered that floods the world with them, and they will drop to ten cents a bushel. No one will wear them.

Man wants what is valuable, and ignores what is common. And value is the progeny of a short supply.

If gold were more plentiful than iron, men would build automobiles of cheap gold and buy expensive iron wedding rings.

The law of supply and demand is the second law of the land, written in the ancient statute books immediately following "The Law of Self Preservation" which is the first.

There are few successes and many failures among men. Success is scarce—and is thus something to be desired.

IF all men were successful, none would be successful, for there would exist no failures for use as comparison. Success, like most things, is comparative—we must have an established yardstick to measure it with. And our yardstick is the average man's inability to make the grade.

This matter of success and failure is a delicate one—a matter of relativity. If one is trying to be a

failure, then is not one a success if one fails?

Success consists in accomplishing what you set out to do. And this being so how is any man able to judge of the success of another unless he knows what the other is attempting?

Most of us dream of success as that condition that yields plenty to eat, ample leisure to enjoy ourselves and assurance of a comfortable old age. All of this involves the accumulation of money; and so we say that a man who has made money is a success, and he who has none is a failure.

That this may or may not be so, we know, but we accept the world's dictum, and so rate success as the ability and failure as the inability to collect dollars.

Out of every one hundred grocers who enter business ninety-five fail. Only five succeed. There are ten thousand workmen for every boss. The world is in the hands of the few and has ever swayed to the dictates of a slender, but intelligent minority.

IT is demonstrably easier to be a failure than to be a success.

But it is not so hard to be a success.

Every physically able man has in him the power and ability to become independent.

And, further, The Day is not far away when there will be no poverty; when every man will do work he loves and is fitted for; when there will be work enough for all, and all will work.

The reason some men must work too hard is because some work not at all. There is just so much to be done, and so many to do it; and when a few loaf, their burden falls on others' shoulders.

Every man has in his knapsack the marshal's baton of success. I believe this—and will continue to believe it until some stronger soul bends me to disbelief; and it will have to be with more powerful arguments than I have yet heard. No man is a failure.

Men do not work from choice. Only a few are genuinely ambitious and continue effort after the need for further effort has vanished. As proof of this I offer the fact that most men retire as soon as they have accumulated that sum, the interest on which will keep them alive.

It seems to me that this also proves that these men must have been working at tasks they abhorred, or if not abhorred, at least at jobs they merely tolerated but did not enjoy. For if a man is working at something he really loves why should he quit? Where else can he find equal enjoyment?

Few men love their work. And this is because few are fitted for what they are doing—it is no fault of the work.

The man who loves his work never works at all. He plays. When the right man hits the right job the sparks fly.

But this is a world of misfits—and therefore, failures.

SOMEWHERE in this world for every man, is a woman who could make him happy; a job that will make him contented and rich; a place in the sun.

The trouble is that the right woman and the right man seldom meet. And most men are square pegs in round holes when their fitness for their tasks is considered.

We breed hogs, racehorses and fighting cocks, selecting mates by scientific formula, and thus evolve a better race of porkines, Man-of-wars and cocks.

But men still breed mongrel-fashion like the dogs in the street, with the expected result. The boy marries the girl next door, not after carefully considering whether her temperament, education, color and heredity are complements of his own. No, Lester!

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Some Funny Experiences I Have Had

By F. N. Darling
County Agent, Huntington, W. Va.

(Every county agent has his store of amusing experiences. Brother Darling gives some unusually good ones. Can you match them?

PROBABLY there is no fellow who has had a greater variety of experiences, funny, serious — all kinds—than that official receiver of the "buck," the County Agent. I am one of those fellows and during my eleven-year term I've had my share. Here are a few of the more humorous episodes that bobbed up as I drove "Old Henry" across the County.

One evening a poultry specialist, we'll call him Smith, and I were holding a meeting in one of our rural sections. Smith, being a good speaker, was going fine, and everything would have ended well, if some old fellow in the back part of the room hadn't asked a certain question.

"Professor," said he, "you have been telling us about that new method of killing chickens. Suppose you show us how to do it." "All right" replied Smith, "bring on the bird and I'll show you." Very shortly afterwards a farmer returned with some neighbor's rooster, and Smith proceeded to demonstrate. He very soon reached the feather picking stage when, lo and behold, what did that darn rooster do but suddenly come to life and move quite quickly away from his executioner! Well such hooting and laughing I have never heard before or since. Those old farmers simply went wild. It was no joke to Smith, nor for that matter to me, at the time. Needless to say, I never heard the last of it as long as I remained in that particular County. As for Smith, he never visited the neighborhood again.

ANOTHER thriller that still lingers had to do with a butter making demonstration given before a group of fifty or more farm women. It seems that we could find no one locally well enough qualified or willing to help us out. So it fell to the lot of a leading official of the Bureau of Animal Industry who happened to be in the County at the time on another mission. After much persuasion on my part, he finally agreed to assist me. Well, everything went along all right for about fifteen minutes during which time I was cranking the barrel churn at a lively rate while he

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The U. S. motion picture truck carries portable projector, generator, batteries, electric lights, power cable and repair parts. The outfit shows clear, bright, first-class pictures.

MISSIONARY MOVIES

By D. S. Burch

U. S. Department of Agriculture

The methods of modern agriculture are being carried into remote regions in a novel but effective way.

ABOUT two decades ago a theatrical troupe, making one-night stands from the eastern seaboard westward, got as far west as Kansas City and went broke. Among the actors was a young man, Ed. F. Pickering, who was sufficiently determined and versatile to "carry on." Obtaining a job on a newspaper he became a successful reporter and finally established himself locally, through his persistence, as a good writer and speaker. The vicissitudes of his career led him to accept, in time, an opportunity to enter the service of the United States Department of Agriculture. But unlike most positions in that Department, or elsewhere in the Federal service, his new job is much like the old one that originally took him West. Although a Government employee, Mr. Pickering is again on tour making one-night stands with a show under his own direction.

The show consists of a one-ton motor truck carrying an electric generator, batteries, a complete motion-picture outfit including screen, a string of electric lights and assorted films, all prepared by the U. S. Department of Agriculture and dealing with modern farm-

ing methods. But unlike the showman who for business reasons seeks the cities and the more densely populated communities, Mr. Pickering is under instructions from Uncle Sam to carry the light of modern farming into the more remote districts. His reports frequently mention that many persons in the audience had previously seen neither motion pictures of any kind or even electric lights. He supplements the pictures with a brief talk concerning them. No admission is charged nor are collections permitted for any purpose.

Although Mr. Pickering has been on Chautauqua circuits, has accompanied revivalists in the capacity of a professional singer, and has had wide experience in addressing meetings, he reports that his present mission as an agricultural evangelist is fascinating beyond description. "Why, I didn't know that Uncle Sam knew we were alive," one grizzled mountaineer told him after one of the shows, "much less sending a first-class entertainment like this for our pleasure and instruction."

FEW showmen receive so many invitations to dinner as Mr. Pickering gets from appreciative farmers' wives, anxious to have a representative of the United States Government sample their pastry, jellies and other culinary products. But his mission is one which permits few luxuries of that sort, for on the morrow he must be at the next school house, church, grove, or other location which the advance man has selected and designated. The advance man, it may be explained, is not part of the outfit but some local person—usually a retired mail carrier or local official—who can be induced to distribute handbills and announce the time and place of the event. The coming of the motion-picture truck and the speaker is truly an event in the localities which Uncle Sam's show is visiting.

In official parlance the project under which Mr. Pickering operates is "Preliminary Tick Eradication." This is an activity conducted by the Tick Eradication Division of the Bureau of Animal Industry, U. S. Department of Agriculture. For years cattle in the South have been the unwilling carriers of ticks which cause enormous losses through emaciation, unthriftiness, reduced milk flow, and death. The tick is

(*turn to page 36*)

The heroine of "Mollie of Pine Grove Vat," a three-reel production that is making friends in Dixie for the work of eradicating cattle ticks, and preparing the way for better livestock.

¶A method that was worked out under actual field conditions and proved extremely practical is described in this article on

DOUBLE DUTY

By *Melville D. Bowers*
Maryland Agricultural Extension Service

THE usual methods of applying dust or spray for the control of the two black and yellow cucumber beetles are ordinarily as practical as attempting to put salt on the saucy sparrow's tail.

Diabrotica Vittata and *Diabrotica Duodecempunctata,* by which Latin names these two cunning plant enemies are known, are altogether as formidable as their names indicate them to be. They occur pretty generally throughout the United States and with their Western cousins, which show some slight modifications in type and coloring, compose a vast army whose sole purpose seems to be the immediate and utter destruction of any and all cucurbits.

Diabrotica Vittata is the fellow with the three black stripes down his yellow back. He feeds on numerous plants other than cucurbits but his special delight is to break his winter fast on the tender and succulent leaves of young cucurbits. *Diabrotica Duodecempunctata* is distinguished by his twelve black polka-dots on a yellow background. His appetite is similar to that of his striped relative. The female of this species, however, has a decided fondness for depositing her eggs where the larvae can feed upon the roots of corn. The species, therefore, not only bears the name of the twelve-spotted cucumber beetle but also that of the southern corn root worm.

THE most severe damage done to cucurbits by either species in probably inflicted upon the young plants. Not only do the pests eat the tender leaves but they carry the bacterial wilt of cucurbits and are the only known agencies for the spread of this serious disease. All through the season the beetles feed upon the leaves and bloom of the plants; and their larvae, once hatched, assist in the destruction by feeding upon the roots and sometimes upon the fruits which lie upon the ground. There is a second brood which likewise is accused of damaging the fruit by eating holes in the rind.

In many respects these two insects are the evil genii of the conscientious gardner who undertakes to grow cantaloupes, cucumbers, squash or any of the other species of the cucurbit family. They are the canny crows of the insect world; for the eyes they have are used to see with, the wings they possess are used to fly with and the discretion that they certainly appear to have is employed at disconcerting times.

Past experience has taught the grower of cucurbits that ordinary measures for insect control are likely to prove ineffective against

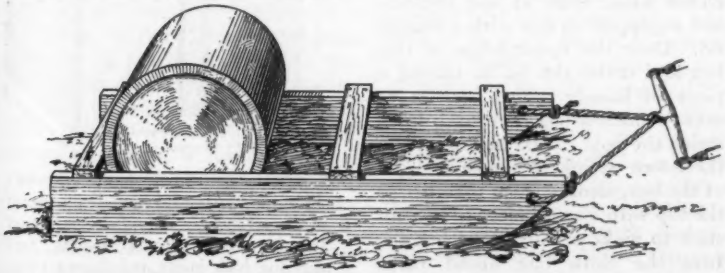
DUSTING

these two pests. Sprays and dusts have been tried. For the trouble of applying them the grower has usually had the dubious pleasure of watching the winged retreat of these insect enemies before his attack. Sprays and dust have served as repellents but not as effective controlling agents. The beetles, apparently, think entirely too much of their delicate digestive organs to derange them by feeding on the choice poisons which the grower so temptingly provides.

Resorting to other tactics, the hard-driven grower has tried covering his young plants with screen cloth or else has adopted the expedient of planting trap crops. Ordinarily, however, when he has escaped without great loss he has had to attribute his good fortune to the fact that he has produced more plants than the pests could possibly destroy rather than to the effectiveness of the control measures he has employed.

Having to bear all the losses which the cucumber beetles are capable of inflicting would seem to be sufficient tribulation for the grower of cucurbits. There are other pests, however, for which he must be constantly on the lookout. Among them is *Aphis Gossypii*, otherwise known as the cotton or melon louse. Called by his true name this insignificant pest may lose some of his dignity but none of his reputation as a destroyer of plant life. By sheer numbers, it is possible for melon aphis to destroy a field of cucurbits almost before their presence is detected. They can, of course, be controlled with nicotine dust but the application must be very carefully and thoroughly made.

IT was while engaged in trying to



The farm sled can be used effectively to mix nicotine dust in large quantities.

solve some of these problems involved in the control of the principal insect pests of the cucurbit family that S. F. Potts, working under the Department of Entomology at the University of Maryland, developed a device that promises to make life easier for the grower and considerably harder for the insects. The efforts of Mr. Potts were confined entirely to the effective use of dusts, which growers generally find more convenient to apply than sprays and which usually are as effective when conditions are favorable. The chief difficulty in the use of dusts for enemies of the cucurbits, however, has been to secure favorable conditions with ordinary equipment.

Cucumber beetles are inclined to be cautious and any unwonted disturbance, such as attends the usual performance of dusting, is sufficient to send them off and away. Aphis have acquired the disconcerting habit of sticking to the under side of leaves and stems and so are difficult to reach effectively even with the best of equipment. The wind is also a disturbing element and even on a comparatively calm day is likely to frustrate some of the efforts of the grower.

Working on the Eastern Shore of Maryland under the actual field conditions which the average grower encounters, Mr. Potts soon saw the necessity for some improved method of applying dusts. He constructed in an experimental way a small wooden box about ten inches square by about twelve inches high, open at the bottom, and equipped on top with a hinged lid. Over the upper edges of this box and under the lid he tacked a piece of loosely woven muslin to make a shallow bag that hung down inside the box. Next he nailed two three-foot strips to opposite sides of the box, joining them together at the top with a small piece of broomstick to make a convenient handle. Into the cloth bag about three pounds of a two per cent nicotine dust were placed and the lid of the apparatus closed.

FROM the outset this simple implement demonstrated some advantages. It was used merely as a

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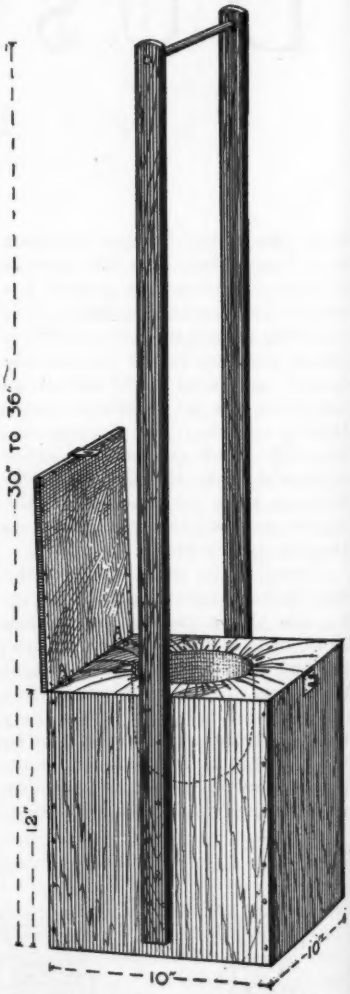

Fumigator and duster found effective in control of cucumber beetles and aphis on cucurbits. It may prove a more desirable and effective means for applying both insect and disease controlling dusts to other truck crops.

A Million Dollar Idea

By Paul Tabor

Georgia State College of Agriculture

How a little more plant food saved a lot of money.

IN 1919 the farmers in southeast Georgia had started growing bright leaf tobacco on such a scale that a specialist was appointed by the State College of Agriculture to help in the production of this crop. Only two or three years before, there was practically no tobacco of that type grown in the State. The damage to the cotton crop by the boll weevil caused a few to try small areas. These were so successful that the acreage increased tremendously.

The new growers would hire a practical tobacco producer from the Carolinas or Virginia to supervise the growing and curing of the crop. These men employed the same practices that were common in the bright tobacco districts of their native states. One of them was the use of 600 to 1,000 pounds of an 8–3–3 commercial fertilizer per acre. In the South, where most of the commercial fertilizers of the country are used, an 8–3–3 formula means 8 per cent phosphoric acid, 3 per cent ammonia and 3 per cent potash.

The summer of 1919 was wet. The tobacco crop did not ripen properly and as a result a lot of rather poor tobacco was cured and sold for a low price. In travelling over the tobacco area, the college specialist, Mr. E. C. Westbrook noticed some fields producing better tobacco than others.

In many cases a higher per cent of potash had been used. This idea was tried out by a large number of growers in the next two years under the direction of Mr. Westbrook, and the results were uniformly good.

IT was then recommended. A conference with the fertilizer manufacturers was held and the results of more potash in the tobacco fertilizers made such a good impression that practically every one of them agreed to thereafter have at least 5 per cent of potash in their goods. In this way an 8–3–5 became the recognized tobacco fertilizer for Georgia.

In 1923 the summer was again wet. The rains came throughout June, paused a little in July and came back strong in August. The tobacco growers were expecting another lot of poor grade leaf. Instead of it they cured out a good quality product, due it is believed largely, to the extra two per cent of potash. It was estimated by Mr. Westbrook that a million dollars was saved to the growers in that year alone. The addition of two per cent was a great idea—it went over big, so big that a tobacco grower in south Georgia now must send to North Carolina if he wants an 8–3–3 tobacco fertilizer.

A Painless Method of Killing Canada Thistle

By Albert A. Hansen
Purdue University Agricultural Experiment Station

(This weed of weeds can be conquered by simple means, says this well known authority.

FRED LOEW was a Hoosier County Agent until Huntington College inveigled him into accepting a professorship. But the urge of the land became too great, so Professor Loew purchased a farm not far distant from the college and found profit and recreation from academic routine by occasionally donning the overalls of a dirt farmer in place of the professorial gown.

The most irritating feature on his farm was the presence of two large patches of husky Canada thistles. Always a believer in lime and legumes, farmer Loew decided to practice what he formerly preached, and so it came about that the thistle-infested land was seeded during April to alfalfa. Two years later I visited the farm and inspected the field that was formerly a prickly mess of thistles. Mr. Loew challenged me to find even a single thistle in his alfalfa patch, but the only place the pest could be found was along the fencerow. The line between the almost pure stand of alfalfa in the field and the pure stand of thistles in the fencerow was a striking object lesson of the value of the legume in conquering the prickly pest. Mr. Loew informed me that although it was necessary to use the hoe against the thistles in the young alfalfa during the first season of growth, the alfalfa was plainly the victor without assistance the following season and by the time the stand was three years old the thistles had been totally vanquished.

THE experience on the Loew farm has been repeated by a number of other Indiana farmers. There is Arthur Sheetz of Bremen, for instance, who fought and conquered a persistent acre and a half patch of thistles with Grimm alfalfa. On one of the Purdue demonstration farms, a field heavily infested with the dreaded thistle was plowed during the fall of 1921 and planted to alfalfa. A good stand was secured and when the alfalfa finally died out, blue grass came on naturally and the turf was practically free from thistles. Not only in the Hoosier state has alfalfa demonstrated its ability to conquer thistles, but from Rock Rapids, Iowa, comes the statement of County Agent Lester Shepard that a number of farmers in his county have reported that alfalfa has killed Canada thistles on their farms. Across the line in Minnesota we learn from County Agent M. E. Teeter that demonstrations in Rock County have shown conclusively

that a good stand of alfalfa will eradicate Canada thistle. In one case the ground was worked thoroughly, the alfalfa seed was sown during early summer and but few thistles survived the following season. During the third year diligent search by Mr. Teeter and a number of others failed to reveal a single thistle shoot in the entire field.

In another neighboring State, Wisconsin, we learn from Director K. L. Hatch that a half acre patch of thistles on a farm in the southern part of the State was conquered by a stand of hardy alfalfa, much to the astonishment of about 75 farmers who attended the demonstration. Many of the farmers were skeptics who had traveled many miles to witness what they thought was impossible.

In spite of the many favorable reports regarding the efficiency of alfalfa as a weed exterminator, this is by no means a fool-proof method. For instance, I know of one farmer who tried to start alfalfa on wet land peppered with a scattering growth of thistles and when he failed to get a stand he cursed the thistles without realizing that alfalfa is a crop that refuses to tolerate wet feet. In order to destroy Canada thistle, a good stand of alfalfa is absolutely essential and the nearest approach to making the method fool-proof is not to neglect any of the recognized essentials of alfalfa production. This means liming where the soil is sour, drainage where the land is wet, inoculation when necessary and the use of genuine Grimm or Cossack seed of known origin,

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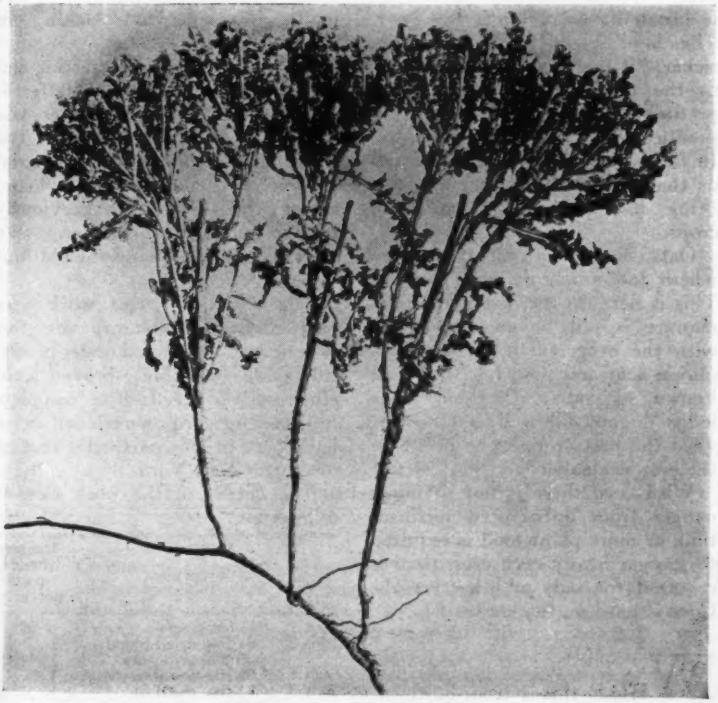

These thistles were cut during July but sprouted again. Note the cut stems and characteristic creeping root.

Feeding the CORN *Crop*

By *James S. Morse*

¶Mr. Morse is a practical farmer up in New York State and the results of his experiments will interest all corn growers.

THE Eastern States have become so thickly populated with dairy cows that more stable manure is becoming available every year. The land is therefore becoming richer. The effect of this increase in the use of stable manure on profitable crop production is a practical and important question. In fact some extension workers tell us that too much stable manure is being used, especially on some crops.

Oats, for instance, often lodge where too much manure is used. This is because the nitrogen in the manure is not balanced properly with the other plant foods, phosphoric acid and potash. It is well known, of course, that oats that lodge do not fill well and do not yield the best crop. The profit on the crop is smaller.

With corn there is not so much danger from unbalanced fertilization, as more plant food is required to grow a heavy corn crop than is required for oats or other cereals. Corn is hard on the land.

WHILE this is true, however, it is sometimes surprising to learn the importance of phosphoric acid and potash on the corn crop, even when manure is applied. As already pointed out these two plant foods are somewhat lacking in stable manure.

Some years ago an interesting and instructive experiment with fertilizers on corn, along these lines, was conducted on my own farm. The soil, on which the experimental plots were located, was a clay loam, all of which had been previously treated with stable manure. We were then still growing the old flint varieties of corn.

The results of this work were particularly satisfactory as this experiment, conducted under practical field conditions, proved conclusively the need of a complete fertilizer for corn on such soil as we have here in this particular section of central New York.

The details of the work were as follows:—

	Treatment	Bushels shelled corn per acre.
Plot 1.	No fertilizer	52
Plot 2.	81 lbs. dried blood 360 lbs. acid phos 99 lbs. muriate potash	84
Plot 3.	81 lbs. dried blood 360 lbs. acid phos	70

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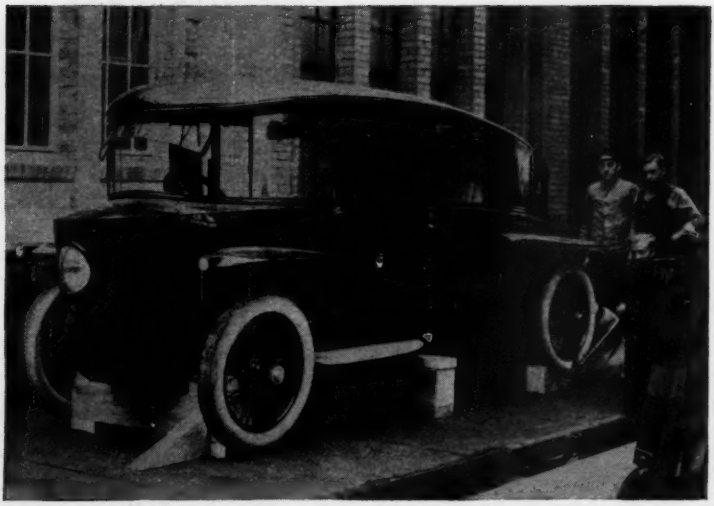
Better Crops' ART GALLERY *of the month*

Celebrating a quarter century of service to Nebraska agricultural education and livestock advancement. Dean E. A. Burnett of the College of Agriculture, University of Nebraska, which he has built up from a small department to one of the leading agricultural colleges of the country. Dean Burnett is a graduate of Michigan Agricultural College and has the honorary degree of Doctor of Science from that institution.

J. B. Cunningham, County Agent at Albion, Indiana, Claude Harper, in charge of sheep extension work at Purdue University, and Grover Favinger of Albion guessing on the weight of one of Mr. Favinger's choice lambs which he has entered in the Hoosier Gold Medal Lamb Club



Remember in our April issue how Jeff pictured an ideal motor car and said it ought to have the motor in the rear? At that time he was just imagining, but it turns out that such a car is actually in existence. It is pictured above ready to be shipped to the Wembley Exposition in England last summer. It is a Rumpler limousine with motor in the rear which gives greater comfort to passengers and greater efficiency in operation. So far this type of car has not appeared in this country.

ECONOMICS and the FARMER

By Arthur P. Chew

Somehow that word "economics" has a deadly sound, but Mr. Chew shows that it can be a very vital and valuable concern of the farmer.

CARLYLE called economics the dismal science.

He did so because economics in his day assumed that the pursuit of wealth is the only concern of man. Today it is recognized that the self interest principle, although the foundation of economics, is not a universal truth but simply a mode of looking at life for scientific purposes. It is a working hypothesis.

Indeed, Adam Smith, the father of economics and the originator of the doctrine that men always seek to gratify their desires with the least exertion, knew that selfishness is not the whole of man. He wrote one book, The Wealth of Nations, assuming that it is, and another book, The Theory of the Moral Sentiments, assuming the opposite.

This was not perverse inconsistency. It was a result of Smith's perception that everything has its other side, and that you can not look at both sides at once. But if Carlyle's charge that economics turns man into a monster of greed is not true, it is true that most people find economics dismal for another reason, namely, that it is apt to be dry.

Certainly the subject has not the same wide appeal as, say, astronomy, which unfolds the wonders of the heavens, or biology, which lifts a corner of the veil shrouding the mystery of life. Yet economics is not dry to those who know its practical uses. For proof observe the enormous amount of economic material published in newspapers, magazines, trade papers and financial papers. Economics is evidently interesting to a large circle of readers.

But farmers are not yet much in love with economics. Plenty of it is dished out to them by Federal and State government agencies, by extension services, and by their own organizations. But it is not a favorite dish. One sign is the small place held by economics in the farm press. Editors know what their readers like. If they thought their readers wanted economics, they would give it to them. Most farm publications specialize in production information. They advise their readers how to raise better hogs, more wheat to the acre, improved varieties of cotton, and so forth. They devote but little space to the problem of selling crops after they have been produced.

WHAT is the reason for this attitude?

The answer is that the farmers have not waked up to the value of economics in their business. This does not mean that they are stupid. Economics had no great practical value for the average farmer until recently, because it was mostly theory. Economic fact-gathering was in its infancy.

Economic theory is no good to the farmer who wants to know what he should grow so as to make the most profit. When he is considering what crops to plant, it doesn't help him to know that the law of supply and demand will punish him if he decides wrongly. What he wants is information as to the quantities needed of different crops.

It helps us to understand the farmer's attitude to remember that until the war and its aftermath disturbed things, the production and consumption of farm products were in fairly stable balance. Farmers accordingly did not have to be constantly shifting their crop and livestock enterprises. Indeed, it was better for them to maintain steady production than to try to anticipate all the ups and downs of prices.

But since 1920 it has been necessary for every farmer to change his production plans in accordance with the ever changing market situation. Production and consumption have been in highly unstable equilibrium. It would have been ruinous for the farmers to keep their production constant, while the market for it was in continual flux. Economic information, that is to say information about markets and prices and the probable trend of demand, then became of crucial importance.

Some farmers were quicker to recognize this fact than others. As a result, a somewhat absurd controversy sprang up as to the relative importance of production and marketing. One group maintained that in the long run prices take care of themselves and return the farmer a fair reward for this work, and that his best policy is to be efficient in production and let marketing alone. Another group, going to the other extreme, held that in production the farmer is efficient enough, and that all his troubles come from inefficiency in marketing.

The obvious truth is that production and marketing are inseparable phases of a single economic operation. Which phase needs the greater attention at any given time depends on circumstances. There can be no question as to the need of attention to marketing when markets are upset and continually shifting. Only in times of stable markets can the farmer afford to keep both eyes on the weather. When prices are in flux, he is courting bankruptcy unless he keeps at least one eye on the trend of the commodity markets.

FARMERS can do this readily with the assistance of the United States Department of Agriculture, which has brought its crop estimating and reporting service to a point where for the first time it becomes possible intelligently to adjust farm production to the demand. By means of surveys and statistical services developed in the last few years, the department is now forecasting markets and enabling the farmer to know what he can profitably grow in time for the knowledge to be of practical use.

Thousands of farmers have been ruined in the last five years by not knowing how to adjust their production to market tendencies. Although an enormous readjustment of crops has been effected, the job has been done more or less blindly, under the stimulus of immediate price changes and without assurance that the course taken was sound from a long time standpoint. It is true that the crop shifts the farmers have made, in a general way, are economically right. Yet costly mis-

(*turn to page 38*)

The Black Flag

By E. W. Howe

I ONCE read of an island in the West Indies which, many years ago, was inhabited by pirates and their followers. From the island went forth expeditions to prey on the commerce of the world. To it returned the men of the black flag, with their loot and wounded.

No one lived in the community except murderers, thieves and abandoned women, yet it was found best, for convenience, to adopt the main rules of civilization. Those who failed to obey were punished. The wretched women who occupied every house adopted, so far as they could, the habits of decent women; the thieves and murderers, on returning from their wild forays, preferred gentleness and politeness to profanity and drunkenness.

These bold buccaneers captured rum as well as gold; intoxicating liquor was as free in their town as water, but they did not drink it without restraint; not because they were Good Templars, but because a drunken pirate is an inefficient pirate, liable to run his ship on the rocks, or into the vicinity of a warship. So drunkenness was discouraged.

The citizens of this community were at war with the world, but fair with their associates. When two of their number had a controversy, the verdict went to the one who was most industrious, temperate and capable.

And it is to be noted that these thieves and murderers did not practice the equality recommended in Russia. If one of their number was a particularly fierce scoundrel, and very effective in handling the cutlass in a fight, he was made captain; those under him received less of the loot when a treasure ship was captured. Those rogues who could not fight well were made cooks on the pirate ships, and mopped up the blood on deck after a battle, while the abler men attended to their wounds. Rewards were for those who earned them, as is the rule in civilized lands.

It is a mighty tribute to civilization that even pirates found they got along better by adopting some of its rules; the simple virtues of temperance, industry, politeness, fairness, pay so unmistakably that ruffians have a certain respect for them.

Morality is not a cranky notion of preachers, teachers, parents and neighbors, but the well-tried experience of the ages.

R. Herbert Spencer once said: "Men at last go right because they have tried all possible ways of going wrong."

God in His infinite mercy is not so much interested in my behaving as I am myself. If I go wrong, God may dismiss me, along with millions of others, with a tear; but going wrong is a serious matter with me; I am punished.

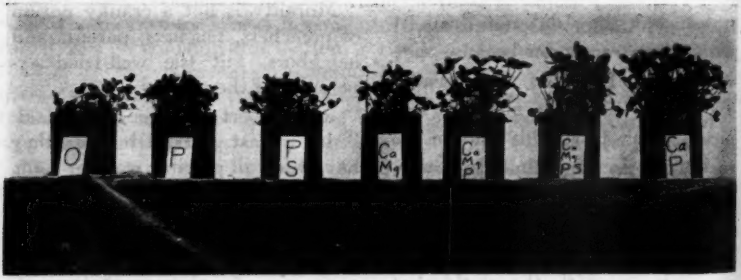
SOIL ACIDITY

By F. J. Sievers
State College of Washington

¶Many agriculturists think that lime is the infallible remedy for soil acidity. Prof. Sievers goes deeper into the matter and presents some new aspects of the subject.

POSSIBLY no phase of agricultural research has received more attention from the investigator than that of soil acidity. Results are available from experiments conducted in the laboratory plant house and field in almost every state in the Union and in every leading European country. The accumulation of data from research has developed many changes in viewpoint and although nothing absolute is known concerning the nature of soil acidity or what it indicates, there is reasonable assurance that many of the interpretations at one time considered correct are no longer to be accepted. Many attempts have been made to correlate all available soil acidity data in the hope that conclusions might be reached that would serve as a basis on which to make recommendations or prescriptions to the man in the field.

One of the first interpretations of acidity was, that it had a direct effect on plant life to the extent that some crops were injured, some benefited, and others unaffected by an acid soil reaction. This led to the classification of agricultural plants on the basis of acid tolerance and resulted in the development of several qualitative tests for soil acidity of which the litmus paper test, the ammonia test, potasium nitrate paper test, and the acid test for carbonates are good illustrations. It developed that among those crops sensitive to soil acidity there were many that were considered very essential to profitable and permanent agriculture. This applied



An acid sandy soil gave best results for red clover where both phosphorus and lime were used. In the field best results were obtained where potassium also was added.

O—Check *P—Phosphorus* *Ca—Calcium (lime* *Mg—Magnesium* *S—Sulphur*

especially to such legumes as red clover and alfalfa, as well as other closely allied crops that are considered essential to any satisfactory crop rotation. Since results from investigations apparently justified the contention that these crops would not grow well unless the soil acidity was neutralized, interest in research centered around the development of methods whereby acidity could be determined quantitatively, in order that the amount of lime necessary to neutralize the acidity could be accurately calculated. The potassium nitrate method, the limewater method, the potassium thiocyanate method, and the zinc sulfate method, attempted to accomplish this. Apparently none of these, however, give a true measurement of the active acidity present at any one time, for when an attempt was made to use such quantitative determinations as a guide for lime applications, it was found that the results from the different methods were not in agreement, nor could they be relied upon for field recommendations. In other words, the same soil did not necessarily show the same amount of acidity with the different tests, nor did different soils, showing the same lime requirements according to test, respond equally to the same treatment. This led to the conclusion that the former tests did not correctly indicate the amount of active acidity and out of this grew the hydrogen method which no doubt is a more accurate measure but, nevertheless, little more satisfactory as a basis for soil management recommendations in the field.

IN reviewing all these methods and also the work required for their development, one cannot help but reach the conclusion that the investigator in his enthusiasm to develop something that was simple, fool proof, and therefore popular, frequently became more interested in the chemical than in the agricultural phase of his problem. Furthermore, prescriptions based on tests that are apparently mathematically accurate or that give a more or less spectacular reaction naturally attract the investigator and make a strong appeal to the farmer. The result had been and still is that the emphasis in soil acidity work is frequently misplaced in that we look upon acidity itself as the problem, when in most cases it may be nothing more than an indication that there is something fundamentally wrong with the soil. This wrong may be so distantly associated with acidity itself, that in many cases the solution is reached without the need of neutralizing acidity or even treating for it. It is contended by some that acidity

(*turn to page 44*)

Red clover on acid muck soil was not improved by using lime, but showed best results where soil was treated with both phosphorus and potassium.

O—Check *K—Potassium* *P—Phosphorus*
Ca—Calcium (lime) *Mg—Magnesium* *S—Sulphur*

Starvation of Potato Plants

These facts are not widely known but are of interest to every potato grower.

WHEN a potato plant does not receive sufficient amounts of the three essential plant foods—nitrogen, phosphoric acid and potash—in available form it starves. The effects of starvation are plainly shown. Nitrogen, phosphoric acid and potash starvation can be distinguished from each other in their effects on the leaves and vines.

In the case of the potato plant, nitrogen and potash starvation are, generally speaking, more common than evidences of a lack of phosphoric acid, though all might occur.

A lack of sufficient nitrogen produces a pale yellow color of the leaves and lack of vigor, with certain other characteristics that are commonly known.

EVIDENCES of potash starvation are not so familiar. They were, however, a common occurrence in the potato fields, especially on certain soils of the Atlantic Coast potato areas, in 1916 and until potash was again available as a fertilizer.

The first authentic reports came from Maine where, due to the scarcity of potash, a fertilizer containing 5 per cent ammonia and 10 per cent phosphoric acid (and no potash) was used. The symptoms are described in Maine Bulletin 288 (June, 1920) as follows:

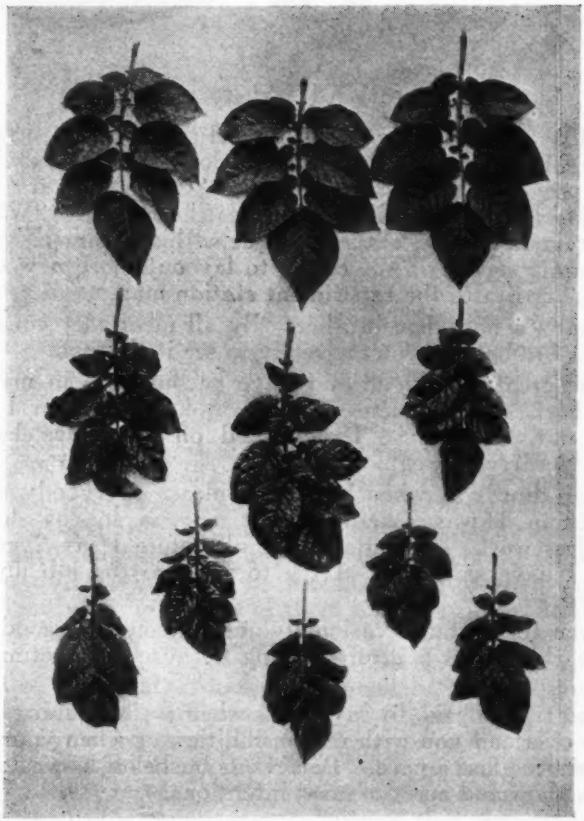
"A 'new potato disease' made its appearance in July of that season (1916). The foliage of the affected plants, instead of being a normal healthy dark green, showed first a peculiar bronzing and yellowing. As the disease progressed the plants had, on casual observation, much the appearance of potatoes just previous to ripening. In the final stages the leaflets hung limp and the entire plant wilted. Usually discolored areas appeared on the various parts of the stem. A very characteristic feature of the trouble was the formation of a dry, discolored, spongy area which involved the whole stem just at the surface of the ground. Following this discoloration of the basal portions of the stem the tissues would dry out, the stem would become hollow at that point and the plant would fall over . . . It was soon discovered that this so-called 'new disease' occurred only where the 5–10–0 fertilizers were used . . . . ."

Potash starvation of potatoes was also reported in Connecticut* in 1917 and 1918. It occurred especially on the poorer soils. Similar evidences of insufficient potash were further observed in potato fields in Florida** in the same years.

For a photograph showing a comparison of affected and healthy leaves see the accompanying illustration.

*Connecticut Agricultural Experiment Station Bulletin 222.

**Florida Quarterly Bulletin, Volume 29, No. 3, July 1, 1919.



The three normal leaves at the top are from potash fertilized plants. The eight crimpled leaves below with yellowish spots are from plants fertilized without potash. (Experiment Station of the Duchy of Anhalt, Bernburg, Germany)

The Editor's

SEE IT THROUGH! Here comes summer! Lots to be done and only a short time to do it. Everybody begins to feel ambitious. "Guess I'll try intercropping the orchard this year" says the farmer. "Why not undertake a couple of new projects this summer?" thinks the county agent. "We ought to lay out more new experiments," cogitates the experiment station man.

That's a fine idea, brother. By all means let your work grow. *But* be sure you are ready to see it through.

The greatest difficulties I have encountered in my work have been either because I undertook more than I could carry out, or because I depended on someone else who failed to carry through.

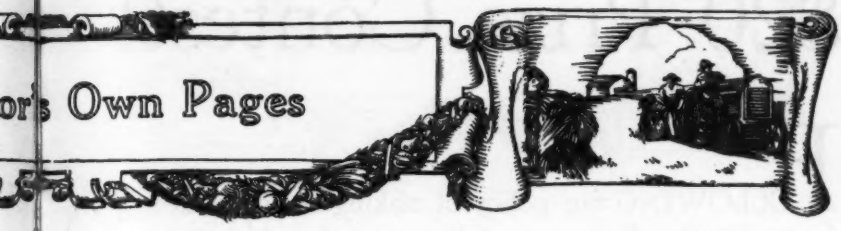
The time was when I tried to please everybody and do everything I was asked. Result .... a lot of slovenly, worthless work. Nowadays I think before I say "yes" and when I have said "yes" I try to stick to the job until it's finished.

Even then I fail occasionally and, of course, a good many people think I'm a gruff old dog because I sometimes say "no."

Don't be afraid to say "no" when well meaning people try to overload you with responsibilities, or when your ambition sets too fast a pace. Better one bushel of harvested corn than a thousand acres of good intentions!

DOWN WITH EVOLUTION! Some of our Southern states have been occupying a good bit of newspaper space lately by reason of laws proposed or passed which forbid the teaching of evolution in the public schools or colleges.

I used to think there was something in this theory of man's growth and advancement but the fact that such laws are proposed and, in one state at least, enacted is pretty conclusive evidence that I was wrong. You'd have to go some now to convince me that man has "evolved" in any vital respect since the days of his pre-historic ancestors.



STENOGRAPHERS FOR COUNTY AGENTS? In a recent issue of BETTER CROPS a county agent spoke of having his stenographer file farm magazines. This casual reference to stenographic help has started a discuisson among some of our county agent readers. I commend the letter on this subject by J. W. Firor in this issue to your attention.

It has long been my personal conviction that most county agents are overburdened with detail work. If a county agent is worth anything, he ought to be too valuable a man to be permitted to type all his letters, keep his own files and carry the drudgery attendant upon his position.

I have known several promising young men who took up county agent work with every prospect of doing fine progressive things. Yet, somehow, the detail work of their jobs engulfed them and, instead of becoming leaders, they became community ash cans. All the junk that others didn't want to bother about was piled on them. Some of them got disgusted and quit, and some of them have continued to struggle along as best they could.

Get me right, I'm not saying that every county agent should be provided with a walnut-paneled office, a secretary, a filing clerk and a telephone girl. Such paraphernalia might be more of a hinderance than a help.

First off, I think a county agent has got to justify his own employment. It may take him several years to prove his own worth to his constituents. During that time he has got to do his own typing and other routine work.

Then the time will come when he has won some measure of recognition and he can properly ask for a larger appropriation and relief from petty details. And what if he gets turned down then? There's a problem.

Perhaps some of our county agent readers who have successfully faced this problem will write and tell us how they did it. Their experience should be helpful to other county agents who are still struggling to keep their heads above the quicksand of petty detail.

Jeff McDermid

$20 Prize Contest!

FOLLOWING our policy of making BETTER CROPS a forum for the discussion of live agricultural topics, we are starting another prize editorial contest.

Each month, for the next five months, I am going to ask a question and offer a prize of $20.00 for the best answer received. The question this month is:

Does It Pay to Raise Quality Crops?

Answer it any way you like. Remember, though, that *facts* are the most powerful argument.

Answers to this question must not exceed 800 words. They must be mailed before midnight June 5th. The winning answer will be published in our July issue. The judges will be Jeff McDermid and Basil H. Pillard, editors of BETTER CROPS. In the event of a tie, the full amount of the prize will be awarded to both contestants. The judges reserve the right to withhold the award in the event that none of the answers is deemed worthy of publication in BETTER CROPS. BETTER CROPS reserves the right to publish any manuscript submitted in this contest at the regular rate of one cent a word. No manuscripts will be returned.

Send your answer before June 5th to:

JEFF McDERMID
Better Crops Publishing Corp.
461 EIGHTH AVENUE NEW YORK CITY

How Cost Account Records Help *the* Farmer

By R. W. *Wallace*
County Agent, Chillicothe, Ohio

¶This is the fourth and last of the prize winning editorials written by our readers on various planks in the Better Crops *platform. It's a mighty interesting piece of reading.*

"GREAT GUNS!" cried Ed Steel, as he finished his poultry records in the County Agent's office one afternoon late in November. "The average number of eggs laid per hen in a year's time is less than 60 and here my flock has an average of 138.3. And what's more, they made a profit of $2.23 apiece, therefore my flock of 260 hens made me a profit of exactly $579.80. I never would have believed it either, if I didn't have the figures right down here in my poultry record to prove it."

Bill Foster, from Carroll County happened to be in the office that afternoon and added his bit to the discussion on Farm Cost Accounts.

"A little over a year ago we organized a Cow Testing Association up in our county," said Bill, "and at the end of the first year, our records showed that out of 182 cows in the Association, almost one fifth of them were losing money for us." He continued to explain how the records brought out the fact that the ten lowest producers in the Association gave a little over 3,400 lbs. of milk for the year and lost their owners $22.00 apiece, and that the six best producers gave over 12,000 lbs. of milk for the year and netted the owners a profit of $129.00 apiece.

THE above bits of conversation, overheard in the Farm Bureau Office of a southern Ohio county, serve to illustrate the two outstand-

ing rewards to be gained from keeping Farm Cost Accounts on the average American farm, the former from the standpoint of an individual, the latter from the standpoint of a community. First, let us discuss the former.

One of the first things done in any sort of accounting is the taking of the inventory, which involves three steps:

First, the listing of all farm property, which, if carefully done, often brings to light many items which the farmer had forgotten he owned.

Next, there must be a classification of this inventory, charging so much of it to the hogs, a certain amount to the cattle, a part to the corn crop and so on. In so doing he must necessarily put a value on each article listed which is the third step mentioned. The farmer thus finds out how much he is worth at the time of taking the inventory.

If nothing more were done throughout the year, the inventory would denote the annual progress. A carefully made inventory is also a distinct advantage in securing insurance adjustments and in obtaining credit.

After the inventory, comes the listing of the receipts and expenses which alone is worth while but which is made a great deal more valuable with the inventory. It would often be of immense value to the farmer to be able to look back over his records and find what he had paid for an article together with the date of purchase.

BUT the final reward is received at the close of the year when the year's records are summarized and an analysis is made of the year's business. Some crops will show a profit. Others may show a loss.

One bunch of hogs which was pastured on a good clover pasture will have a different tale to tell from those fed in the dry lot.

Perhaps it was "Old Spotty" and "Roan's" cream checks which kept the grocery account balanced. Or, it may be that the feeding of that balanced poultry ration caused the chickens to lay twice as many eggs as the same number of hens did last year. At any rate, the farm cost records are the only means of analyzing the farm business to ascertain just which of our farm operations are yielding us a profit and which are not.

From the standpoint of a community in which a number of farmers are keeping records, the above advantages are multiplied. The results enable them to pick out that type of farming which is best suited to that particular community. If one of their number is making a profit and another is not, what is the factor which makes the difference? Perhaps, it is too large a farm; perhaps it is too much overhead expense in buildings. Perhaps the tractor is not economical on so small a farm. It might even be the failure of a clover crop which caused one farmer's profits to dwindle, but *why* did that clover crop fail?

The records will not answer the last question for you, but *they will point an accusing finger at that particular part of your farming operations which caused the loss.*

What Agriculture Needs

A more universal cooperation—more diversified crops, more intensive farming—looking to building up of our lands by growing legumes. I must compliment your BETTER CROPS bulletin.—*W. H. Staudy, M.D., Town Creek, Ala.*

Equalization of credit to conform to that of other industries in rate and time. Values for products produced equal to value of products of other industries, pro-rata. Cooperation. Business and all industries cooperating with agriculture.—*G. M. Bridge, Farming, Somerton, Arizona.*

Every County Agent His Own Stenographer?

Dear Jeff:—

I read with a great deal of interest the letters from county agents in Kansas and Virginia about office methods and assistance. I happen to be a county agent without any help either in the office or field. Naturally, I often feel as though my work could be made many times more effective if I only had someone to do the details. Whether or no this would follow it is always difficult to say. However, in spite of the lack of assistance in the office, I have managed to keep all letters that it seemed worth while keeping filed away under subject matter divisions, answer most of the questionnaires that arrive (of course no one would expect a county agent with a dozen stenographers to attempt to answer all of the questionnaires received,) write on the average one news or instructional article on agricultural subjects for the local paper daily, keep all important bulletins from the states and government filed under a card index system, and do other odds and ends around the office. I average about one full day each week at office work.

From the viewpoint of most any county agent, to have stenographic assistance is exceeding desirable. Just to think to have someone in the office all the time, not to have to hunt and pick on a typewriter, to be able to gather together information about all sorts of agricultural lore for the benefit of the farmers and to have it filed away on neat cards, and may be to act as a clearing house for farming information through some system of cards and letters for one's county—surely all this is desirable.

But then, there are several viewpoints besides this one. County agent work, I have been told over and over again, is purely educational. If the county agent has excellent office equipment and abundant assistance, it may so happen that very often he will be doing many things for the farmers individually and in groups that from a merely educational viewpoint it would be better for them to do themselves. If the financial support for this assistance should come from certain groups of farmers, I have an idea that he certainly would do a lot of routine work that could hardly be designated, tagged, classed or interpreted as educational work.

To illustrate, supposing a group of farmers have a certain product to sell. They, the members of the group, as a group are supporting the fund which employs the stenographical assistance of the county agent. Naturally, they ask the county agent to find them a market, supervise the assembling of the product, quote it out, and in fact do the selling. I assume from letters that come to my office rather regularly that this is being done in many cases. I do not mean it is not worth while work. But the question naturally is—should a county agent do it? If he did not have the facilities, may be this group of farmers would, with his advise and assistance, do it them-

selves. They would undoubtedly benefit by the doing, while on the other hand they have merely made a business agent out of the county agent.

There are other viewpoints, some in favor of expanding the work of the county agent and some against it. Certainly, I believe that I could do more—much more—follow up work in connection with demonstrations, field meetings, boys' clubs, organization of groups, if I had office help and field assistance.

Then it might so happen that if the work were expanded too rapidly, the natural rapid expansion would bring about a natural reaction which would hurt the work itself. In the counties where the farmers have had a very difficult time for the last few years, the question of taxes alone might cause so much opposition as to seriously cripple the extension work in agriculture. I know some counties that would not stand for a budget which called for the expenditure of $15,000 for county agent work, even though it was needed and worth while; and even though it meant but a few cents per farm. It looks too big. By working along gradually, in time all of the desirable phases of the work can be taken care of, in my opinion, and ultimately more will be accomplished than if we have a drive for rapid expansion.

I have written this in spite of the fact that I have asked for stenographic assistance in each of my last two annual reports and expect to do so again.

Very truly,

J. William Firor, *County Agent, Athens, Ga.*

Sulphur and Soil Fertility

Dear Sir:—

It is in an effort to supplement the verdict passed on the role of sulphur in present day agriculture as presented by Dr. Stewart through your columns recently that the following points are submitted. We all appreciate the fact that while data are perpetual as records of actual happenings, the interpretations placed on those results undergo change, as our store of direct and correlative information increases. It is, therefore, on these honest differences in interpretation that another side of the sulphur question merits presentation.

Considerable weight is attached to sulphur brought down in rainfall as a factor in the maintenance of a sufficient supply of that element. Amounts ranging from as little as 3.38 lbs. per acre in Iowa to as high as 400 lbs. per acre in Kentucky are reported in the American literature. Unfortunately many of the data were taken in or near cities, where a generous contamination of the air with sulphur compounds is effected. Such data afford an excellent chemical means of taking an industrial census; but as criteria for estimating the sulphur returned in rural sections they are subject to considerable discount. MacIntire finds, for instance, that whereas the sulphur returned in the heart of the City of Knoxville is 95 lbs. per acre, at the Experiment Station in the suburbs it is about 50 lbs., and at a distance of 7 miles it is only 18.6 lbs. per acre. The average of six rural stations in Tennessee is about 20 lbs. of sulphur per acre. At the Iowa Station it is about 18 lbs., and Wisconsin 7 lbs. As a fair average for rural districts in the Mississippi Valley probably not over 15 lbs. of sulphur are received per acre per annum in rainfall, with over half of it coming outside the growing season. It so happens that the Mississippi River carries into the sea the equivalent of 15 lbs. of sulphur per acre of its watershed.

To reduce the problem to a simple basis let us assume that the soil is totally devoid of sulphur. Average crop requirements so nearly balance the sulphur brought down in rainfall that a hundred per cent utiliza-

tion of rainfall sulphur would need to be effected to enable the production of a full crop. The Cornell data show that sulphur leaching goes on unimpaired by a growing crop, and whether the plant could utilize sulphur when it is present in very limited quantities, as is true of nitrogen, is not at all indicated. The sulphur leached away in the Cornell lysimeters is in excess of that returned in rainfall by 13.7 lbs. on the cropped soil and 17.9 lbs. on the uncropped. To return to the original assumption of there being no sulphur in the soil, rather than 800 lbs. as is actually the case, would the tendency of sulphur to leach, which seems forcefully indicated, continue to prevail, or would the plants grasp the sulphur with the greater avidity? No answer is forthcoming on this point from any experimental work that I have noted thus far.

By abstract reasoning it is apparent that the sulphur brought down in rainfall is no greater than that removed by drainage; for were an excess so brought down it would automatically result in an accumulation of sulphates. Analysis of the soil, however, shows sulphur content to be quite low. Leaching results substantiate the above postulate also, in that sulphur removed exceeds that returned in rainfall. Such comparisons likewise as have been made of cropped and virgin soils show a substantial loss in sulphur over and above that actually removed by crops, except as replacements have been made through manure or fertilizer.

That rainfall sulphur of itself is entirely inadequate finds ample proof in many places where sulphur fertilization yields remarkable results, and the soils even in those cases are by no means devoid of sulphur. It follows, therefore, that a deficiency of available sulphur is manifest long before total exhaustion is approximated, and a certain soil supply must be maintained if crop yields are not to suffer. With crops and leaching removing more sulphur than is being returned in rainfall, it becomes only a matter of time before additional sulphur in some form need be applied.

The necessity for sulphur fertilization has not exhibited itself forcefully along the Atlantic seaboard, for the reason that commercial fertilizers, used ostensibly to supply nitrogen, potash, or phosphorus, have quite generally carried sufficient sulphur in combination to circumvent a shortage, or if indeed a sulphur shortage existed, the credit for all increases has generally been attributed to other factors.

Yet in spite of an annual application to the soils of the Atlantic seaboard of more sulphur, unit for unit, than either nitrogen, potash, or phosphorus, it is not difficult to find numerous places where sulphur, in addition to the generous application made through fertilizer, has given beneficial results.

In illustration, the results of Adams' work on sweet potatoes at the Delaware Station might be cited. Bear in mind that 1,000 lbs. of 2–8–8 fertilizer, enough presumably to more than satisfy the crop requirements of nitrogen, potash, phosphorus, and sulphur, were applied. An additional broadcast application of 200 lbs. of sulphur resulted in increases in the yields of from 24 per cent, where no disease was found, to over 70 per cent where disease was a factor.

Like increases have been noted on Irish potatoes on Long Island, and on certain vegetables in Maryland. Isolated instances of phenomenally increased yields from sulphur are to be found in the literature from the leading countries of Europe as well as our own, and they serve chiefly to prove that the need of sulphur becomes manifest by the toll of time, of cultivation, or the prodigality of the agricultural practices.

Very truly yours,

H. Clay Lint, *Ph.D.*

Three New Booklets of Interest to You

As part of our educational work we are issuing a series of booklets on various crops. The purpose of these booklets is to show by facts and figures how proper fertilization brings the farmer a greater income both through increased yield and improved quality.

Each booklet has been written by an authority in the field who is in touch with the latest reliable information on the subject. This information has been presented in a popular, readable form with numerous illustrations of actual results. The following booklets are now available for distribution.

BETTER TOBACCO: This is a new edition of the booklet that was in great demand last year. It has been completely revised to cover all types of tobacco and all tobacco growing districts in the country. It includes as well a valuable section on sand drown.

BETTER TRUCK CROPS: This 48-page booklet deals with the cultivation and fertilization of the principal truck crops. Each crop is treated separately and information on seeding, varieties and proper fertilization is given for each crop.

BETTER POTATOES: Methods of seeding, planting, cultivation and fertilization are discussed in this 48-page booklet. The various potato-growing regions of the country are treated separately making this an unusually comprehensive work.

Any or all of the above booklets will be sent free upon request to any reader of BETTER CROPS. If, after reading your copy, you desire more for educational work, we shall be glad to furnish them as long as our supply lasts.

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By Ted Butlar

BETTER CROPS' Washington Correspondent

THE writer hastens to record certain definite changes in the administration of the Federal Department of Agriculture which have been brought about by Secretary Jardine since the last issue of BETTER CROPS. They have in them the element of efficiency as well as economy in Federal expenditures.

When Secretary Jardine came to Washington he found a number of offices reporting directly to the head of the Department whose work dealt with personnel and business management problems. Like a good executive the Secretary saw the necessity of heading this work up under a single directing head. So he appointed Dr. W. W. Stockberger as Director of Personnel and Business Administration. It will be the duty of this Director to act as a clearing house on matters of personnel and business administration. It was a popular move with Department workers.

Another important change has to do with the appointment of N. A. Crawford of Kansas as Director of Information. He started his new duties on May 1 and will have supervision of the Press Service, Office of Publications and possibly other branches of Department work having to do with getting the printed word out to farmers. Crawford comes fully equipped to his new job, having worked for a number of years under Secretary Jardine at Kansas State Agricultural College as head of the journalism department.

Evidently Secretary Jardine is not wholly contented in sitting at the helm of his Department and watching things at long distance. The writer is informed that he will heed the call "back home" the last of this month and will take a six week's trip through the West to see the work of the Department in the field. The importance of an inspection trip of this kind is seen in the fact that approximately 16,000 of the 20,000 workers in the U. S. D. A. are located in field offices. The Secretary is going to give special attention to work on National Forests, construction of roads, the foot-and-mouth disease situation in California, and other lines, but he will take an equal opportunity of getting down to plain talk with farmers on the way to see what conditions they are facing and what they think of the status of agriculture at the moment.

GOVERNMENT experts are showing continued interest in the deadly cycles through which prices of major farm products constantly go in hopes that some means of ironing them out might be reached. They have just found, for instance, that the ups and downs in the price of hogs occur with such regularity that the cycle can be

smoothed out by the American producer without the producers in any other part of the world. It could be done, says the government, if producers would drop their present method of gauging their production plans on the basis of current corn and hog prices and instead base their breeding operations on the official outlook statements issued periodically by the U. S. D. A. When hogs are high in price or corn low, farmers go in for hogs. When the next crop is ready for the market there are too many of them. We have had these vicious price cycles since we have had an American agriculture. Perhaps they can be ironed out. We'll hope so.

Officials of the U. S. D. A. are not content with knowing something about farm prices for the early past, the present or the future. On the assumption that history sometimes repeats itself they are going back into the annals of history to find out how farm prices have been acting during the past 100 years. C. F. Sarle and a corps of workers are going through files of country newspapers, private diaries and records, in fact, any document which will give data on the price of farm products and the things farmers had to buy over this period.

OHIO has had to give way to Kentucky in the campaign to improve livestock through the use of "Better Stock–Better Sires." A report just issued shows that a total of 3,118 livestock owners in the Bluegrass State have signed declarations to the effect that they are using purebred sires exclusively for all classes of livestock raised. Ohio, which at the beginning of the year still held the premier place among all states in this campaign, is second with 2,970. Virginia is third with 2,281 purebred-sire farms. Joe Nageotte, who does the county agent work in Breckenridge county, Kentucky, has the high record for the period from January 1 to March 31. Joe added 71 members to his roll of farmers using nothing but purebred-sires.

In connection with the energetic campaign being conducted to improve the class of farm livestock as carried on largely through county agents, the U. S. D. A. has just given out some rather striking information. About 62 per cent of purebred livestock is marketed directly for meat purposes. Strange as it may seem purebred animals cost slightly less than scrub stock to raise to maturity and only about one half of the purebred animals in the country eligible for registration have been listed in the books. There is the further fact that 96 per cent of persons who give the use of purebred sires a fair trial stick to the general principle of using them for all classes of livestock. These statements are based on the results of a questionnaire covering 45 states in an intensive way.

Since the first of the year six new counties in four states have received official recognition as tuberculosis-free areas following the completion of testing of all cattle within their borders. The new counties are in California, Iowa, Minnesota, and North Carolina. This swells the total to 59 counties and more than 400 counties are engaged in the work. At the beginning of March there were unfilled applications for testing representing more than 2,500,000 cattle. This gives some idea of the progress being made in this very important Federal project.

Among the good things scheduled for publication in the June issue of BETTER CROPS *are "Growing Dewberries in the Carolinas" by R. B. Fairbanks and "Cutting the Waste in Food Handling" by Frank George.*

A Painless Method of Killing Canada Thistle

(*From page 13*)

because a long time stand is essential where Canada thistle is to be destroyed.

Another and important point, the thistles must first be weakened before attempting to grow alfalfa, since the tender young alfalfa seedlings will be brought into direct competition with the hardy thistle shoots. If the alfalfa is to be seeded in the spring, it is usually worth while to plow the land deep the preceding fall, thereby setting back the thistles and giving the alfalfa a better chance to get a good start in the world. Then when the alfalfa is seeded, be sure to prepare the seed bed thoroughly in order to further weaken the thistles and give the alfalfa seed a decent place to germinate. To continue the thistle-weakening process further, a little diligent use of the hoe in the young alfalfa patch will sometimes help the alfalfa materially in the life battle with its spiny competitor. When a good stand of the legume is secured, not only will the alfalfa roots crowd the thistle roots, but the alfalfa will enjoy being clipped several times, which is death to the weakened thistles. The fact that alfalfa grows more rapidly than its prickly neighbor also adds the power of shade to the legume legions in the battle for supremacy.

I cannot state as a positive rule that alfalfa will always eradicate Canada thistle. Nature simply doesn't work by rule and every farm is a little world all by itself that differs from every other farm in the universe. But I have never seen a good stand of alfalfa fail to drive out Canada thistle. The alfalfa method seems to offer a bright ray of hope in the battle against the weed of weeds.

Some farmers do not believe that Canada thistle forms live seeds, but this patch of seedlings grown from Indiana seed proves they are wrong.

Missionary Movies

(*From page 7*)

a blood-sucking parasite and also carries and transmits a disease known as Texas fever, because of which the U. S. Government has established a quarantine line between the North and South, above which southern cattle are not permitted to move.

The nature of tick eradication calls for suitable State and local laws and compulsory dipping, since the failure of one cattle owner to bring his animals regularly to the designated dipping vat may delay or even defeat the loyal efforts of his neighbors. It is to meet this situation and to show the work clearly by the compelling evidence of motion pictures that the department has sent Mr. Pickering into the field with the outfit described. That is also the reason why he is instructed to visit the more outlying localities where the people have had slight opportunity to enjoy the advantages of travel, of agricultural enlightenment, and education that prevail elsewhere.

THE feature picture of the entertainment is a three-reel production having the melodramatic title, "Mollie of Pine Grove Vat." This picture, which was prepared especially for the purpose, tells in story form how the people of a community where the cattle were infested with the blood-sucking ticks got rid of these pests largely through local sentiment and the heroism of a young woman. Unlike the average so-called educational movie, "Mollie of Pine Grove Vat" deals with real life and problems of the South. There is not only a villain in the picture but two of them, and both are of the gun-toting type. There are of course, also, the necessary hero and heroine.

Recognizing the unfortunate fact that misguided citizens in the South have destroyed hundreds of dipping vats by dynamite, the picture contains scenes typical of such blind opposition. There is a good fist fight, a liberal comedy element, and several dramatic crises. But woven into these entertaining and realistic scenes there are educational portions dealing with the cattle tick, the necessity for strict adherence to educational measures, and an appeal for public support. The reward of such support is the definite assurance that tick eradication is feasible and that the wiping out of the loathsome pest will mean greater happiness and prosperity from the time of accomplishment.

In the picture, Mollie Sawyer, the heroine, through her pluck and ability, wins an appointment as range rider after her husband, who had been serving as range rider, was disabled by a sniping shot from one of the villains. She carries the work through to completion with the assistance of loyal citizens, and in one scene arrests the two villains whom she catches red-handed in dynamiting the local dipping vat.

"Mollie, though a fictitious character, is winning friends in Dixie," Mr. Pickering states. "In one locality where several vats have been dynamited and the work hindered, the showing of the pictures had a profound effect. The citizens, on their own initiative, found the men responsible for destroying the vats, had them prosecuted and jailed and then rebuilt the vats and resumed dipping." On another occasion the leader of a well-organized anti-tick element, who had previously boasted that he would break up the show and was present with his gang, approached the Government representative after the meeting and shook hands, with the explanation that he "was all wrong." Audiences include many women and children who have a

profound influence, experience shows, in sentiment for better methods of livestock raising and agriculture.

THE States visited thus far by the movie outfit making its one-night stands have been: Alabama, Arkansas, Louisiana, Mississippi, North Carolina and Oklahoma. The regular schedule is six shows a week regardless of weather conditions, roads or other barriers. Some of the roads are through forests and it is not uncommon to detach the electric generator from the body of the truck and carry it to the place of meeting on muleback. The condition of some of the unimproved roads, as observed by the writer who spent several days with the truck recently, is almost beyond belief to persons accustomed to improved highways. It is a common occurrence to drive up to a stump in the middle of the road and then jack up the wheels to permit the axles to pass over the stump. Mr. Pickering is accompanied generally by a mechanician who assists in driving the truck and in operating the projector. The show is strictly first-class from a technical motion-picture standpoint, having ample electric power to show pictures practically as clear as those of the best motion-picture theaters in the cities.

In addition to the tick picture, the pictorial repertoire includes other agricultural subjects, scenic wonders of the National forests, and generally a picture of horse training and broncho busting for the benefit of the youngsters. "People everywhere, but especially in the South," declares Dr. R. A. Ramsay, a Department official under whom the field force in tick eradication operates, "like pictures with a story and with action enough to make them interesting. We believe that pictures are none the less educational because they have sufficient human-interest features to entertain as well as to instruct."

Beginning in January of this year, the U. S. Department of Agriculture equipped a second and similar motion-picture truck which is operated in Florida under the management of John F. Fahey, whose qualifications are the same as those of Mr. Pickering. Dr. Fahey has made a careful study of the agricultural and tick situation in Florida and concludes that the State is losing, each year, more than five million dollars' worth of

A cattle-dipping vat maliciously destroyed by misguided opponents of dipping to free South from ticks.

milk in feeding cattle ticks. The estimate is based on careful calculations. A 42 per cent reduction of milk flow due to cattle ticks and a short lactation period of only 200 milking days in the year cause a loss per cow of $60 annually, Applied to the 97,000 dairy cows in Florida, the loss exceeds five million dollars by a considerable margin.

Dr. Fahey reports public interest and appreciation similar to that experienced by Mr. Pickering. Due perhaps to more favorable weather conditions, but also to large attendance, about one-half the showing which Dr. Fahey has made were held out of doors. "The average schoolhouse, church or other available building is too small" he reports, "to accommodate the persons desiring to see the pictures." On some occasions where it has been necessary to hold them inside, the crowd out of doors peering through the open doors and windows was nearly as large as that in the building.

Economics and the Farmer

(*From page 18*)

takes have been made. In view of the fact that the readjustment process is by no means over, the opportunity to continue it in a scientific manner, by using the department's forecasts of market tendencies, is one that the intelligent farmer will not overlook.

Briefly, the object of the department is to get farmers into the habit of regulating their production by anticipating market requirements. It is no use talking about orderly marketing without some regulation of production, because a heavy oversupply of any product will wreck the best marketing scheme ever devised. Anticipating market requirements means forecasting prices. It may look risky to anticipate the future, but in agriculture it is more risky not to anticipate it. Because of its long turnover, agriculture needs to anticipate the future more than any other business. Once crops are planted and livestock bred, the farmers can do little toward coping with an unfavorable market situation. Adjustment of production can only be done before crops are planted and livestock bred.

Accordingly, the department is combining crop forecasts with analyses of price cycles to indicate price tendencies. Already it forecasts hog price trends months in advance. It predicted last fall that the price of hogs would probably go to $14 early this year, and the prediction was fulfilled in March. The forecasts are based on semi-annual pig surveys indicating the probable number of hogs to be marketed the following season, and on various economic data including the corn-hog ratio and the state of general business, all taken in conjunction with the known periodicity of the hog-price cycle.

In 1922 the department forecast heavy production and low hog prices for the following year. Hog marketing in 1923 and 1924 was the largest ever known. Some shrewd farmers had confidence in the forecast, cut down their hog production, and avoided losses. In the same way some farmers are making money out of hogs now, because on the advice of the department they resisted the influences that set the stage last year for underproduction of hogs.

MANY other practical recommendations based on economic studies are regularly made by the Government. In February it urged potato growers to make no increase in acreage, declared increased tobacco production undesirable for most

types, predicted that sugar prices probably would not be higher for the coming season, notified growers of flax how much they could increase flax acreage without undue risk of oversupplying the domestic market, warned peanut growers that an increased acreage might mean lower prices, and sketched the outlook for vegetable crops, grains, and livestock. This was applied economics.

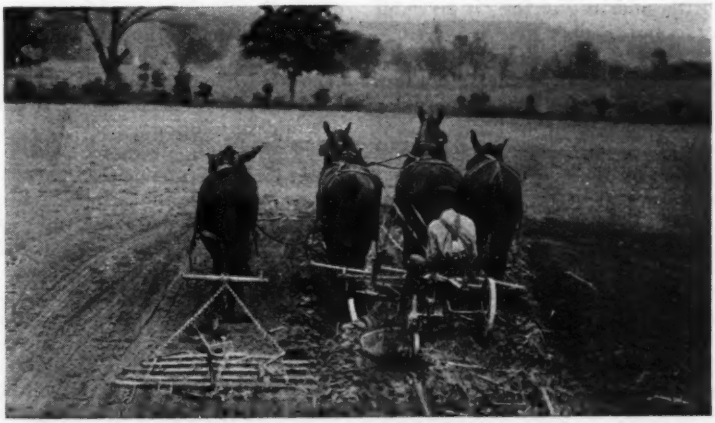
In agriculture, as in business, high prices are usually followed by low prices and vice versa. Apart altogether from their seasonal price trends, most farm commodities have a definite price cycle. Economists are learning to chart cycles in advance, and to predict their phases as astronomy predicts the phases of the moon and the due-dates of comets.

As yet only main trends of prices are predicted. It is impossible to allow for all the perturbing influences that may introduce unforseen jogs into a price curve. But the time is near when abundance of crop and market information, and skill in its interpretation, will put price forecasting on a sound basis.

Indeed, some authorities believe, because agriculture is normally more stable than business, that it will be easier to flatten out the hills and valleys of the agricultural cycle than to do the same thing with the business cycle.

Economics is dry when it is academic, when it has no visible relation to practical life, when it is a purely abstract study or merely a confusing mass of statistics. It is emerging out of that stage. In the purchase and sale of farm products, economic knowledge often means all the difference between profit and loss. When it is not the farmer, but the other fellow who has the knowledge, it is a fair guess whose columns at the end of the year will have the greater number of entries in the red.

Sometimes the Department of Agriculture has been criticised for putting out market information, because packers and grain buyers, and commission dealers are more skilled in its use and make more use of it than do the farmers. The remedy is obvious. It is not to go back to the old days of blind fumbling for everybody, but to see that the farmer gets an even break in utilizing this new means of putting the trade in farm products on a business footing.



This is the method worked out by Ross Atkinson of Paoli, Indiana, for saving time and for working down the ground when it is most easily done, immediately following the plow.

Double Duty Dusting

(*From page 10*)

duster and was dropped down over the hills about as fast as the operator could walk along the row. The dust descended nicely from the suspended cloth onto the plants below but the rate of mortality among the insect tribes was not sufficiently high.

The next efforts of the experimenter, therefore, were devoted to discovering what would happen if the box were left in place for a short time to confine the dust and fumes. Various periods of time were tried with the final discovery that one minute of fumigation was sufficient to end the earthly career of every cucumber beetle. In other words, one hundred per cent of the cucumber beetles confined to the dust and fumes of the nicotine preparation for sixty seconds were killed. Shorter periods showed lower percentages of mortality.

Satisfied with these results from the use of nicotine dust in his new apparatus, Mr. Potts next devoted his attention to the calcium cyanide dust, one of the more recent insecticides. This chemical when exposed to the moisture of the air gives off a poisonous vapor known as hydrocyanic acid gas and leaves behind, after all the gas is evolved, nothing more dangerous than ordinary air slaked lime. As the effective agent is the gas and as the dust is likely to damage the plants, it was found necessary to make some modifications in the new device. This consisted of nothing more complicated than an extra thickness of cloth to hold the dust and keep the particles from sifting through.

Time experiments with calcium cyanide gave varying results which on the whole were not quite so satisfactory as those obtained with nicotine dust. One minute of fumigation, however, was sufficient to account for the majority of the cucumber beetles and for 94.5 per cent of the aphis.

Repeated trials with the new device demonstrated its great advantages over former methods of applying dust. In the first place it trapped the winged cucumber beetles. It made dusting a far less disagreeable task for the operator. It eliminated the wind as a disturbing factor. And finally and most important of all, by confining the dust and the fumes, it greatly increased the efficiency of dusting as a means of controlling both cucumber beetles and aphis.

There were numerous other important considerations in its favor. It could be easily and cheaply constructed. Its operation in the field was so simple that dusting could be made a mere matter of employing ordinary labor. Furthermore its great economy in the use of dust compared with other means of application recommended it highly.

IT was apparent, however, that the new device, even though so obviously efficient, would have little practical value if the operator was required to wait for a minute at each hill while the dusts got in their deadly work. This problem proved one of easy solution.

All that was necessary was to equip each operator with a battery of ten or twelve fumigators. This, of course, speeded up the work of dusting and automatically regulated the time that each fumigator remained in place. It worked out simply enough. The first fumigator was placed over the first hill in the first row. The second fumigator was dropped over the first hill in the second row, the third fumigator over the first hill in the third row, etc. By the time the last fumigator had been placed, the first one was

ready to be moved up to the next hill in the row and the entire operation across the rows repeated. If the operator works fast more fumigators can be used. It is estimated that with ten or twelve of the fumigators, one operator can dust an acre of cucurbits in about two hours.

TO secure the best results with the fumigators the soil should previously be worked up loosely about the plants so that the apparatus will fit snugly to the ground. With the nicotine preparation the fumigator should be dropped in place over the hill with sufficient force to give the plants a good coating of dust. With the calcium cyanide, the fumigator should be set in place lightly. If the air and ground are particularly dry, the liberation of gas from calcium cyanide can be hastened by dampening the cloth screen or the inside of the box. With either preparation, the fumigator should remain in place over the plant for a full minute.

About three pounds either of the nicotine or calcium cyanide dust will be found to be the right quantity for each fumigator. This amount can be used up before losing its strength and the supply can be replenished handily from cans placed at regular intervals throughout the field.

Calcium cyanide is a commercial product and can be purchased as a dust. Fifty to one hundred per cent crude calcium cyanide dust should be employed. Two per cent nicotine dust can be bought in prepared form or can be made by mixing forty per cent nicotine sulfate (black leaf forty) with hydrated lime in the proportion of one pound of the former to nineteen pounds of the lime. About ten pounds of either dust should be ample to treat an acre.

MR. POTTS has devised an ingenious method which makes the mixing of a two per cent nicotine dust a very simple and easy operation. An ordinary farm sled, consisting of two runners held upright by strong braces nailed across the top in front and in the rear, an ordinary insecticide drum of two hundred pound capacity, and a few large stones, are all the equipment necessary. In the drum 95 pounds of hydrated lime are placed and five pounds of forty per cent nicotine sulfate are poured into the lime. The stones are then placed in the dust and the opening of the drum is closed. The drum is then placed between the runners of the sled, a horse hitched to the apparatus, and the drum is rolled over the ground until the dust is thoroughly mixed. After being screened it is ready for use. If the sled is made large enough several drums can be rolled at the same time.

The combined fumigator and duster, developed by Mr. Potts, is expected to increase greatly the popularity of dusting. While it was developed in connection with experiments to control the insect enemies of cucurbits, it would seem to have almost unlimited possibilities for the truck grower. Other uses for it will suggest themselves when it is pointed out that it can be made in varying sizes and be employed successfully with other dusts.

Feeding the Corn Crop

(*From page 14*)

Stated in terms of a ready mixed fertilizer the above treatments would equal on plot 2,600 pounds per acre of a 2–8–8 fertilizer, and on plot 3, 600 pounds per acre of a 2–8–0 (no potash) fertilizer per acre.

By comparing the yield on plot 1 with plot 2 the effect of the complete fertilizer is determined, while a comparison of plot 2 (complete fertilizer) with plot 3, same fertilizer but no potash, gives the effect of potash.

About Ourselves

BETTER CROPS is a monthly magazine edited primarily for those who act in an advisory capacity to the farmer.

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The season was fairly favorable. What was the result of the experiment?

THE increase in yield per acre, due to the effect of the complete fertilizer, was 32 bushels shelled corn per acre. The cost of the amount of fertilizer used should not exceed $11.50 per acre. The return in increased yield was 32 bushels, which at an average value of $1.25 per acre equals $40.00. This shows a profit of about $28.00 for the complete fertilizer.

The increase in yield due to potash was 14 bushels of shelled corn per acre. To produce this 100 pounds muriate of potash per acre was applied. This shows that the potash contributed to the profit on the complete fertilizer.

These results persuaded me that I could not afford to do all the work of growing the corn crop without supplying the plant food necessary to assure a full yield. And although we are no longer growing the old flint varieties of corn we still use the complete fertilizer except when an abundance of stable manure is used and in such cases we use a mixture of 10 per cent phosphoric acid and 10 per cent potash.

It is true that these results are only for one year; and that soils and cultural treatments vary in different parts of the State. The result of this experiment, together with our general practice, however, has convinced us that manure should be balanced with phosphoric acid and potash when applied to the corn crop.

Watch for our June issue which contains "Use of Stilts in Tree Wiring" by Lloyd Austin and "The Tie That Destroys" by Albert A. Hansen. Plenty of other big features as well!

Some Funny Experiences I Have Had

(*From page 5*)

explained the proper methods. But the seventeen different varieties of cream which we necessarily had to use didn't change into the butter stage as quickly as the speaker desired. For thirty minutes everything worked out wrong. The cream got all gummed up, whereupon we both picked up the barrel out of the rack, and began shaking it; meanwhile, the ladies were all tittering and laughing, while my friend was perspiring very profusely and saying some awful things under his breath. The agony lasted for thirty-five minutes, and the demonstration was pronounced a satisfactory one considering the unfavorable conditions.

After the crowd had all left my friend said to me "The next time any County Agent asks me to give a butter making demonstration I'll politely tell him to go straight to Hades. From now on I'll stick to my own job."

AND then there is my famous "Horse Case."

In a remote part of the county lived a farmer, a retired minister, who not only possessed a wooden leg but a strong vocabulary. One day he called a young veterinarian to look over his horse which apparently had a broken leg. The doctor after making a preliminary examination said: "This horse in addition to having a bad case of mange, has a broken leg. If you will shoot the horse I'll prove its leg is broken when I make the post mortem." But when the post mortem was made, no broken bones could be found. So the old farmer flew into an awful rage, exclaiming, "You have caused my valuable horse to be killed, now what are you going to do about it? It will cost you just one hundred dollars."

Of course, they couldn't come to any settlement and without my knowledge or consent I was named the chief affixer of damages. So one day they both came strolling into my office to present their case. Try as I could, I was unable to duck, for they had me cornered. An argument which could be heard two blocks away soon started. At one point the veterinarian intimated that he would knock the farmer's block off, if it were not for the fact that he was so old and crippled. This was too much of a challenge for the farmer to ignore passively and he immediately started for his adversary, hopping as fast as he could on his one good foot, and saying some things that were not exactly biblical. Of course, I had to step in between them to prevent further trouble.

They had already taken up over one hour of my time, and I could see no way out, but to render a decision. So I finally fixed the amount of damages at $25 which the veterinarian very reluctantly paid.

I got the usual reward of the peace-maker—neither of them ever spoke to me afterwards. Naturally I took it much to heart but, looking back now, I can see a lot of humor in the situation.

We have just had bound a few copies of Vols. II and III of BETTER CROPS *comprising the issues of March 1924—March 1925. They are bound in black buckram and stamped in gold. Readers may procure them as long as the supply lasts for $3.50 apiece, postpaid, which represents cost to us. Make checks or money orders payable to*

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Soil Acidity

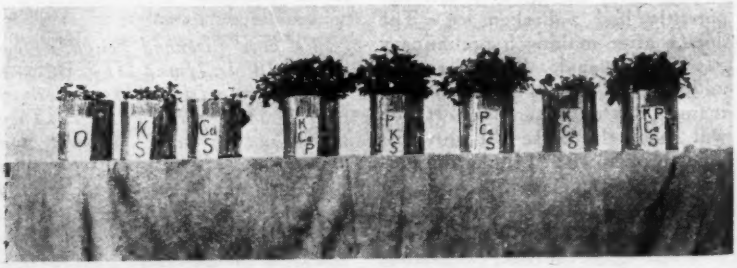
(*From page 21*)

may indicate the presence of toxic bases, like aluminum, iron, manganese or magnesium. Others hold that acidity indicates the lack of proper and specific plant nutrients in the soil and especial emphasis is placed on the element calcium, especially in the carbonate form. A relationship between soil acidity and available phosphorus in the soil is recognized by many, and results in the field have shown that acid soils will frequently respond to an application of some form of phosphorus fertilizer.

It is quite evident from all these findings that much time and energy has been consumed in an attempt to develop a soil acidity test that would find universal application for all soil types everywhere. Unfortunately the lack of a full appreciation of the apparent fact that soil acidity may be the result of many different causes and must therefore be dealt with not as a condition itself, but as an indication of one or several of many possible conditions, has resulted in little more than controversies among investigators.

IT seems that the time has arrived when we should make an effort to determine the various factors responsible for soil acidity. This should be followed by the development of accurate means to identify the factors responsible for the acid condition in order that specific recommendations may be made on the basis of such identifications. This problem needs a real diagnostication, if we are to avoid some of the mistakes that have been made in the past. Too many recommendations concerning the use of lime have not been justified on the basis of results obtained.

Soils in Western Washington, that portion of the state west of the Cascade Mountains, are acid in reaction to a very pronounced degree. Some of these soils show a "lime requirement" of as high as 30,000 lbs. per acre, and it is almost impossible to get clover or alfalfa to grow on them. This is as it should be and since the value of these desirable legumes is fully appreciated, applications of ground limestone and quicklime were recommended. With practically no exception, the farmer failed to get results and this was not as it should be. The only explanation that seemed reasonable to his advisors was the fact that the amount of lime applied was not sufficient to neutralize the acidity and clover and alfalfa could not be expected to flourish unless this was



Red clover on acid silt loam soil was not affected by lime, but responded to the use of phosphorus.

O—Check *K—Potassium* *P—Phosphorus*
Ca—Calcium (lime) *S—Sulphur*

done, or that there was another limiting factor not recognized in the lime application. This explanation, which in a way seemed fairly logical and consistent with the findings of the investigators, gave the farmer no relief because the cost of neutralizing the acidity of his soil and correcting its fertility problem was prohibitive. He was, therefore, confronted with a real soil management problem. The solution of this problem called for field and laboratory work with the result that it was found that lime applications and the neutralization of soils were not only unnecessary, but apparently had no influence on the growing of clover.

Silt loam soils that would not grow clover in their untreated condition grew clover and all other crops well when treated with a phosphorus fertilizer in the form of superphosphate. Lime applications apparently had no influence since clover grew just as well where the phosphate fertilizer was used alone as it did where used in combination with a lime treatment.

Peaty marsh lands would grow no clover in their native state, but when treated in this case with about 300 lbs. of superphosphate and 100 lbs. of muriate of potash per acre, the clover grew abundantly. Here again lime applications had no apparent effect.

Sandy soils on the other hand produced their best results with clover only when lime was used in combination with both a phosphate and a potash fertilizer. It was evident, however, that even here there was no relationship between "lime requirements" as found in the laboratory and the amount of lime applied.

Other illustrations might be given pertaining to intermediate soil conditions in Western Washington, where practically all soil types are represented, showing how they vary in their response to treatment, but these will suffice to serve the purpose. All of these soils come from practically the same locality and without exception gave a positive reaction to all tests for lime requirements, while in the field only the sandy soil responded to lime applications. To make general recommendations for uniform lime applications or even for applications at a rate consistent with the results from test for acidity or "lime requirements" would not only be unscientific, but decidedly ill-advised.

WHAT then do acidity tests indicate and how should results from such tests be applied to field conditions? It is the contention that this question cannot be answered in the abstract. Before safe and satisfactory recommendations can be made, there must be a diagnosis of what acidity might indicate from the standpoint of plant development under the existing condition of soil composition and climate in the region where acidity exists.

In Western Washington, for instance, the precipitation is very heavy and by far the greater portion is received during the dormant season. Whatever leaching takes place must therefore occur during the dormant season when there is little or no plant growth. Due to the fact that the climate is mild there is very little frost in the ground during the winter, and leaching takes place without difficulty.

Contrast this condition with the climate in the Eastern part of the United States where the ground is frozen during the winter and where the precipitation is heaviest during the growing season, and it is not difficult to imagine that the resultant effect of leaching may be quite different. This is borne out by results from analyses that show in a general way that these Western Washington soils are all very low in calcium carbonate, in spite of the fact that they contain a very high percentage of calcium. Furthermore, all of these soils will respond

to the use of a phosphate fertilizer, while analyses show that many of such soils are surprisingly well supplied with total phosphorus

SUNLIGHT also may have a bearing on this subject of soil acidity. In view of the recent findings in the field of animal nutrition where sunlight has been shown to have a direct effect on calcification in the animal body, is it not reasonable to suppose that there may be a similar relationship between sunlight and calcification in the plant? In other words, legumes growing in western Washington under conditions of much cloudiness and a limited amount of direct sunlight, may not require as much calcium to complete their development as might be necessary to grow this same crop under conditions where sunlight is more abundant and more direct. If this is a fact, then this would seem like at least a partial explanation for the difference in the effect of soil acidity on plant growth.

Many other illustrations might be given to justify the contention that soil acidity in itself is not a safe basis for recommendations concerning soil treatment and it is hoped that we will not continue to confuse the symptom with the disease as we apparently done too much in the past.

What is Failure?

(*From page 4*)

He marries her because she has such a cute way of looking side-long at him. He cannot resist her delicious, tantalizing come-hither-in-ness.

And having married, mongrel fashion, this specimen of *Homo Sap* gets a job driving a bakery wagon, advances to the position of baker's helper and finally when the boss' son dies he takes over the bakery—and makes a beautiful failure of it. All because of propinquity, chance, and jumping joyously into a job that he fits like a Number Three foot in a Number Eleven boot. His wife leaves him. Bankruptcy. Divorce.

Just around the corner from this lad was a girl with whom, science says and can prove, he would have been happy. Right up the street was a chemical laboratory where he could have learned a profession in which he would have been immensely successful—he was eminently fitted to be a master chemist.

Failure—how common!

Success—how easy!

Most men only go as far as they are pushed. They are only as successful as they have to be. They have no self-starters but their self-quitters are in wonderful shape—farmers especially.

A farmer is a man who attempts to coerce Nature into yielding him a living. Sometimes he coerces her, more often he curses her.

Farmers often fail because they are unfitted for the work—more often because they are lazy, unambitious, unintelligent.

I leaned over the fence to talk to a farmer once. I said, I can show you how to double the yield of almost every crop you are raising there.

He yawned and replied, Shucks, I ain't farming half as good as I know how, *now!*

IT is easier to fail than to succeed at farming. Any man who tells you what a cinch it is to run a farm at a profit is either a liar or just a plain damn fool. City business

men, who themselves are simply long-odds gamblers, often attempt to take an abandoned farm and make a quick success. They soon find it cannot be done. It *can* be done, but they do not know how.

When land was cheap and productive, these city men could have made a success of farming. Their small knowledge, inefficient manual dexterity and slight technical ground work was in those days sufficient to yield a profit from crop-raising.

But times have changed.

Farming is now no snap, I freely admit.

Farmers are dependent upon the same waves of prosperity and slump that affect Big Business. Farmers have their lean years, their fat years. Right now nearly a million farmers are bankrupt, not always through any action of their own, or lack of action, but because they are going through the tail end of the deflation period. More will go broke before the period ends.

But many farmers fail—as many business men fail—because they will not use the knowledge they have; because they will not take advantage of the knowledge available to them.

And because they will not pioneer.

Not one farmer in five will experiment with new methods for making profits. And the other four will wait years before they adopt his successful plans. Not one in ten will actually farm the way he *knows* is best! Whether from laziness, or pure thoughtlessness, I cannot say, but most farmers seem bent on being failures simply through overlooking the very things they know how to do—but do *not* do.

ONE farmer right in back of me spent all last winter figuring out the best fertilizer formula and the rate of application for each of his crops. He carefully and studiously made up a chart showing how he would apply a thousand pounds of 5–8–5 to each acre of cauliflowers, five hundred pounds of 2–10–4 on his corn, and so on, *ad fertilizem*.

I checked up his work, and found that, for his soil, his chart conformed to the latest, best and safest experiments.

I complimented him on his work.

What was my surprise, later, then, to hear that he had chipped in with two other farmers who had bought several carloads of straight 3–8–5; that he was going to standardize on this mixture for all his crops, regardless!

Hell's belz! Of what use is knowledge if folks will not avail themselves of it! What good are plans not followed! Of what value are scientific experiments the results of which are ignored!

It would seem to a man up a tree that most folks are trying to fail—and are succeeding in failing!

THE rules for failure are simple, and easy to follow:

First, without any thought as to your fitness, enter the nearest business at hand, or take the first job that comes along. Make no analysis as to your leanings, likes or dislikes. Just jump in.

Next marry a girl simply because you like the way her eyelashes curl. Don't let the fact that both of you are blondes stop you; and, though you know she detests studious people, and you are studious, remember love will fix that. It will *fix* it—all right!

Now you are ready to fail.

From this point on the rules are simple.

1. Spend more than you earn.
2. Don't use the knowledge you have.
3. Absorb no new knowledge.
4. Laugh at those who are sincerely trying to pioneer.
5. Don't work too hard; find the easy way.

Success — monetary success — is not compulsory. It is not a matter of the statutes. There is nothing in the Bible that either prohibits

success, or, on the other hand, that commands that man attempt to corral the elusive dollar.

It is simply the scarcity of success which throws around it an allure that leads men on. I think it might be safely said that most men would rather not be failures. Though the urge may not be strong toward success, at least failure is repugnant.

There is more to life than dollars.

There are luxuries money cannot buy—freedom, love, laughter, life in a cottage, vegetables plucked fresh from the ground with your own hands, children's giggles and shouts, the love of a life-work.

There are causes which money can aid; more that money cannot help. A man does not need money to have friends—in fact, as soon as he has money, his friends are not friends, but yes-men who agree with him on all the things about which he is mistaken.

Many folks want success, riches, acclaim—because they feel that, after their own needs are taken care of, they can afford to be generous with others.

The fact is, as we now know, that the training gained in garnering gold is no training for doing good; and that, having made a success, a man finds it just as hard to be generous on an income of a hundred thousand as on ten or one.

Money does not stimulate generosity—it atrophies it.

Getting rich is the art of discovering that, having made your own way, you cannot have it.

Dollar-success is only one kind of success.

There is no happiness in dollars.

Henry Ford cannot eat any more than John Jones. A man can only eat so much, wear so much, and have so much shelter—any more is useless.

And when a man begins to accumulate things, he finds that, contrary to his understanding, the things own him—rather than he owns the things. He is at their beck and call—they run his life, and ruin it.

When dollar-success has furnished a home, a livelihood and assurance of food, clothing and shelter during old age, it has done its duty. More should not be asked of it.

Beyond this point dollars are a commodity to be bartered and sold like horses. Some want more; some less.

We pay for money in liberty.

The law of compensation is ever at work.

"The cost of a thing," says Thoreau, "is the amount of what I will call Life which is required to be exchanged for it."

To get we must give up something.

So, now we get the proposition:

Any man is a success who is furnishing his family enough to eat, enough to wear, plenty of shelter; and who is putting away enough dollars to guarantee a continuance of these things in the future.

But any man who does this much and no more is a failure. *Think that out for yourself!*

EDWARD G. PROULX

The death of Edward G. Proulx, of Purdue University, State chemist and seed commissioner of Indiana, at Lafayette, Ind., on March 31st, is a matter of deep regret to agriculturists all over the country.

Mr. Proulx was born at Hatfield, Mass., December 3rd, 1880. He graduated at Massachusetts Agricultural College in the class of 1903. After serving that college as chemist until 1907 he removed to Purdue University. In 1918 he became State chemist and in 1921 State seed commissioner.

In his profession Mr. Proulx enjoyed a high standing. He served last year as president of the United States seed control officials. He was also a member of several technical societies and of local organizations. By his death, agriculture loses an able leader and a devoted servant.

A difference of 31 prunes to the pound!

THE effect of high analysis fertilizer on the size of prunes is clearly shown in an experiment recently made by Herschel Johnson in Santa Clara County, California.

Crop comparisons were made on five plots of ten trees each. One plot was not fertilized, while the four remaining plots were each fertilized with a different mixture.

The ten trees on the unfertilized plot gave the lowest yield, averaging 89 to the pound. The highest yield, averaging 58 to the pound, was produced by the ten trees fertilized with 100 pounds of a 4-10-10 mixture.

This experiment shows that trees fertilized with a mixture containing sulfate of potash produce heavier yields and larger fruit.

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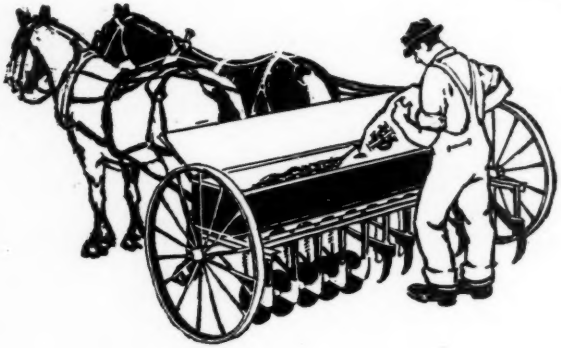

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